REMARKS/ARGUMENTS

By this paper, Applicant responds to the Office Action of July 28, 2005 and respectfully requests reconsideration of the application. The shortened statutory period runs through October 28, 2005. Accordingly, this response is timely.

Claims 1, 3-6, 8, 9 and 12-54 are now pending, a total of 50 claims. Claims 1 and 14-53 are allowed, and 3, 4, 8 and 9 are objected to. No status is indicated for claim 54. As noted below, claims 5, 6, and 12-13 are not allowed, however, the Office Action is too incomplete to raise a rejection of these claims. Of the claims not allowed, 5 and 13 are independent.

I.   The Claim Amendments May be Entered Under Rule 116(b)

Claim 11 is cancelled. Claim 13 is rewritten into independent form without amendment, and without introducing new issues. Claim 12 is moved from dependent on a cancelled claim to depend on clam 13. Such amendments may be entered as of right after final rejection. 37 C.F.R. § 1.116(b).

Applicant also notes that final rejection is premature, in view of two features of the Office Action.

First, the Office Action does not indicate the status of claim 54. Is claim 54 allowed, rejected, or indicated allowable?

Second, the Office Action is very disorganized, and suggests that the Examiner has not focused on the claim language. The Office Action jumps from claim to claim, without any organized or consolidated statement of the grounds applicable to either claim 5 or claim 11, and often appears to be addressed to language that does not appear in the claims. The discussion of claim 11 is spread over several non-contiguous paragraphs. Paragraph 1 of the Office Action states that claim 11 is rejected over Colwell '728 and Papworth '473 combined. However, the discussion of claim 11 in paragraph 3, 4 and 7 compares language of claim 11 only to Papworth '473.

In an effort to advance prosecution, Applicant will attempt to respond; however, Applicant does not concede that any rejections have been set forth in the Office Action with sufficient particularity to constitute rejections at all, let alone final rejections.

In the event that any patentability concern remains, Applicant requests a careful, organized, limitation-by-limitation comparison of all of claims 5 and 13 (not selected, isolated words, or misparaphrases) to the references, that clearly sets out the Examiner's view. Applicant commends to the Examiner's attention 37 C.F.R. § 1.104(c)(2), which requires both the designation of the "particular portions relied on" and a clear explanation of "pertinence" of those portions.

II.   Information Disclosure Statement

Four references (Hank, two Nanodata, and Rosin) are crossed off the Form 1449 returned with the Office Action of July 2005, but with no indication of why these references were not considered. A replacement Information Disclosure Statement and Form 1449 are enclosed, with these references resubmitted, and an indication of precisely where copies can be found.

Also listed on this Form 1449 are two issued patents that were previously disclosed as pending applications in the Information Disclosure Statement of March 30, 2001. These are not new references – they are merely existing references, now with patent numbers.

III.   Issues Presented

1. Is claim 5 obvious over the combination of Colwell '728 in view of Papworth '473? The underlying issue is:

- Are the terms "architecturally visible" and "architecturally exposed" to be given their "plain meaning," their "ordinary and customary" meaning in the art, as used in the very references applied by the Office Action, or are claim terms to be disregarded, or given a broader meaning for which the Office Action provides no support?

2. Is claim 13 obvious over any reference? The underlying issues are as follows:

- Can claim 13 be obvious when the references fail to teach a claim limitation, and would be rendered unsuitable for its intended purpose if modified as the examiner proposes?

IV.   Argument

A.   Claim 5

Claim 5 is compared to certain portions of Colwell '728 and Papworth '473 in paragraphs 2-5 and at pages 5-6 of the Office Action. Claim 5 recites as follows:

> 5. A method comprising the steps of:
>
> decoding a macroinstruction of a computer, the decoding of the macroinstruction generating a plurality of iterations of:
>
> a pattern of microinstructions implementing a basic operation, wherein the microinstruction set is architecturally exposed to programs fetched from an architecturally-visible memory of the computer, and
>
> a branch instruction predicted not taken.

Claim 5 recites a "microinstruction set" that is "architecturally exposed" in "an architecturally-visible memory." In contrast to the usual implementation of microcode, that is kept deliberately hidden below architectural visibility, claim 5 is directed to a computer in which the microcode serves its usual function – the target of an instruction decoder for macroinstructions – and in addition is "architecturally exposed to programs fetched from an architecturally-visible memory."

The Office Action compares this claim language to Colwell '728, col. 12, lines 19-23. Though it is difficult to discern the Examiner's position with any precision, it appears that the Office Action errs in disregarding a claim term that is stated twice in the claim, the term "architecturally."

1.   The Broadest Reasonable Interpretation of "Architecturally Exposed" is the Ordinary and Customary Meaning

The Office Action states "The Examiner contends that the limitation of architecturally exposed and architecturally visible merely requires that the memory is accessible." The Office Action states no support for this contention, and cites no evidence to suggest that the claim terms "architecturally exposed" and "architecturally visible" have ever been understood to have such a meaning. It appears that the Examiner has disregarded the claim words "architecturally" in the claim phrases "architecturally exposed" and "architecturally visible," and is reading the claim as if it merely recited "exposed" and "visible."

MPEP § 2111.01 instructs as follows (citations and quotations omitted):

2111.01 Plain Meaning

I. THE WORDS OF A CLAIM MUST BE GIVEN THEIR "PLAIN MEANING" UNLESS THEY ARE DEFINED IN THE SPECIFICATION

[D]uring examination ... the words of the claim <u>must</u> be given their <u>plain meaning</u> unless applicant has provided a clear definition in the specification.

II. "PLAIN MEANING" REFERS TO THE ORDINARY AND CUSTOMARY MEANING GIVEN TO THE TERM BY THOSE OF ORDINARY SKILL IN THE ART

Claim terms are presumed to have the <u>ordinary and customary meanings attributed to them by those of ordinary skill in the art</u>. ... It is the use of the words in the context of the written description and customarily by those skilled in the relevant art that accurately reflects both the "ordinary" and the "customary" meaning of the terms in the claims.

The art draws a clear distinction between things that happen only in conventional "microcode" and things that are "architecturally exposed" or "architecturally visible." "Architectural" is the only term available in the art to convey the difference between non-architectural data or state (data that is maintained in internal storage that is only accessible to CPU hardware designers and microcoders) vs. "architecturally-visible" or "architecturally exposed" data that are available to programmers at the level of the <u>architecture</u>.[1] Therefore, it cannot be "reasonable" to disregard the word "architecturally" in the claim or to define it as offering no further limitation.

The Colwell '728 reference itself demonstrates that the "ordinary and customary meaning" of the claim term "architecturally visible" does not extend to <u>all</u> memory that is merely "accessible," it extends only to those that are accessible at the level of the <u>architecture</u>. For example, Colwell's claims 1, 11 and 21 discuss certain "results" or "result data" that are "committed [to] architectural state." Each of these claims discusses data that is generated speculatively, and maintained in some form that is broadly "accessible" to microcode. Colwell

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[1] Recall that the "architecture" is the "contract" between the CPU designer and programmers, the set of guarantees that the CPU manufacturer provides to operating system and applications programmers about how the computer will behave. The word "architecture" also refers generally to behavior that remains consistent in successive implementations of the architecture, even though the underlying implementation changes.

then uses the term "architectural" to express the difference between data "accessible" only by microcode and kept deliberately invisible from all macrocode programmers, and data that is visible at the level of the Intel Architecture to operating systems or user programs.

Colwell's claim 30 further draws the contrast between "microcode" and the "architectural state" of claim 21. Colwell's patent makes clear that the ordinary meaning of "architecturally exposed," "architcturally visible" or "committed to architectural state" is not the same thing as "accessible" to microcode.

Finally, MPEP § 2111 makes clear that it is the Examiner's burden to come forward with a "reason" for a claim construction that departs from the ordinary meaning. That requires evidence. No evidence supports the Examiner's "contention." All evidence supports the interpretation that "architecturally exposed" and "architecturally visible" are different than merely "accessible" to microcode. If the Examiner maintains a broader definition based on personal knowledge, Applicant requests a reference or affidavit, pursuant to 37 C.F.R. § 1.104(d)(2).

2. As Properly Construed, Claim 5 Distinguishes the Art Relied on in the Office Action

The Response of May 2005 pointed out, and the Office Action does not dispute, that the designated sections of Colwell '728 only discuss conventional microcode that is accessible only to a microcode programmer. The Office Action offers no basis to believe that Colwell '728 departs from the ordinary practice in the art, which is to keep microcode invisibly hidden below the architectural boundary.

There is therefore no dispute that Colwell '728 does not teach anything corresponding to a "microinstruction set [that] is architecturally exposed to programs fetched from an architecturally-visible memory," once the claim term "architectural" is given the "ordinary and customary meaning" in the art.

The Office Action does not compare this part of claim 5 to any portion of Papworth '473.

Any obviousness concern is resolved, and the claim may be allowed.

B.   Claim 13

Claim 13 is compared to certain portions of Colwell '728 and Papworth '473 in

paragraphs 3, 7 and 8 of the Office Action. Claim 13 recites as follows:

> 13. A computer, comprising:
>
> an instruction decoder designed to decode macroinstructions into microinstructions for execution in an instruction pipeline on a computer, and for at least one macroinstruction, the decoding of the macroinstruction generating a plurality of iterations of:
>
> > a pattern of microinstructions implementing a basic operation, and
>
> > a branch microinstruction predicted not taken, wherein the branch microinstruction is generated carrying a marker indicating that the branch microinstruction defines a boundary between two successive iterations;
>
> the instruction decoder being further designed to cease generating iterations on detection of a branch mispredict.

1.   The Office Action Errs in Stating a Claim Limitation is Obvious After Conceding that it is Absent From the Prior Art

The Office Action applies an incorrect legal standard. In paragraph 8, the Action

essentially concedes that neither reference teaches "a marker indicating that the branch

microinstruction defines a boundary between two successive iterations" within a

macroinstruction. The Action then appears to suggest that creating such a marker, where none

previously existed, would be obvious.

MPEP § 2143.03 and Federal Circuit law both set out a different legal test. Every

limitation of a claim must be met by prior art drawn from one of the categories of § 102. No

limitation may be met by a "rabbit out of a hat." *Motorola v. Interdigital Technology Corp.*, 121

F.3d 1461, 1466-67, 43 USPQ2d 1490, 1490-91 (Fed. Cir. 1997) (every element must be met by

prior art, even elements that are "well known" standing alone). The standard for obviousness

only permits obvious combinations of preexisting elements, not creation of previously unknown

elements.

Claim 13 is not obvious.

2.   The Modification of the Prior Art Suggested in the Office Action Would Render the Prior Art Unsatisfactory for its Intended Purpose

MPEP § 2143.01 instructs as follows:

2143.01 Suggestion or Motivation To Modify the References [R-2]
THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) (... The Board concluded the claims were prima facie obvious, reasoning that it would have been obvious to turn the reference device upside down. The court reversed, finding that if the prior art device was turned upside down it would be inoperable for its intended purpose...).

The Office Action suggests that it would be obvious to apply Colwell's "beginning of macro instruction" and "end of macro instruction" flow markers to "a plurality of" mid-instruction microinstructions.

If either of Colwell's flow markers were applied to "a plurality of" microinstructions from the middle of a macroinstruction, as recited in claim 13, Colwell's computer would break. Colwell's "beginning of macro instruction" and "end of macro instruction" are used to indicate actions that must only once per macroinstruction, and must occur only on instruction boundaries, such as updating the IP, allowing interrupts, architecturally committing intermediate state, etc. (*e.g.*, Colwell '728 col. 24, line 11, col. 25, line 5, col. 25, lines 35-37). If those actions were taken at a "plurality" of mid-instruction iterations, then those actions would be performed at the wrong time, and Colwell's computer would malfunction.

The Office Action makes the assertion that modification "would have provided a boundary between iterations." The Office Action cites no evidence to suggest that this problem was known, that any solution was desirable, or that the particular marker recited in claim 13 was a known solution. If the Examiner maintains that this modification is obvious, Applicant requests a reference or affidavit, pursuant to 37 C.F.R. § 1.104(d)(2), showing that the problem and solution were known in the art.

3. **The Office Action Reflects a Misunderstanding of Papworth '473**

The Office Action compares the "branch mispredict" of claim 13 to col. 9, lines 3-15 of Papworth '473. However, the only mention of branch prediction in this portion of Papworth '473 is Papworth's express statement that there is no "branch misprediction." Papworth '473, col. 9, lines 12-14.

The reason is simple: Papworth deliberately eliminates both branch and branch prediction from the situation considered at the top of col. 9. At col. 6, line 68 to col. 7, line 8, Papworth '473 teaches "eliminating" the inter-iteration conditional branch entirely. If there is no branch, there is no prediction. Papworth "eliminates the need for branch predictions." Papworth '473, col. 7, lines 6-7.

The Office Action does not contest the showing made in the paper of May 2005, and repeated here, that Papworth deliberately "eliminates" the branches, so that there cannot possibly be a "branch mispredict" as recited in claim 11. Instead, the Office Action misparaphrases the argument raised in the May 2005 paper, and responds only to the misparaphrase. The Examiner's current view is not clear.

C.   Dependent claims

The Office Action fails to state the status of claim 54.

Dependent claims 6, 7, 10, 12, 13 and 54 are patentable with the independent claims discussed above. In addition, the dependent claims recite additional features that further distinguish the art.

V.   Conclusion

In view of these remarks, Applicant respectfully submits that the claims are in condition for allowance. Applicant requests that the application be passed to issue in due course. The Examiner is urged to telephone Applicant's undersigned counsel at the number noted below if it will advance the prosecution of this application, or with any suggestion to resolve any condition that would impede allowance. In the event that any extension of time is required, Applicant

petitions for that extension of time required to make this response timely. Kindly charge any

additional fee, or credit any surplus, to Deposit Account No. 23-2405, Order No. 114596-031-

000127BS.

Respectfully submitted,

WILLKIE FARR & GALLAGHER LLP

Dated: September 27, 2005

By: _____

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